Buena Vista Ecological Reserve

(CNLM No: S037)

Annual Work Plan

October 2012 - September 2013

Prepared for:

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I. Introduction and Summary

This annual work plan has been developed from the management guidelines of the Buena Vista Creek Ecological Reserve Management and Funding Agreement (MFA) signed in August of 2007 (CNLM/CDFG 2007) between the Center for Natural Lands Management (CNLM or Center) and the California Department of Fish and Game (CDFG) and from the Draft Habitat Management Plan (HMP; CNLM 2008) for the site. Associated with the MFA and HMP is a detailed Property Analysis Record (PAR), which outlines a list of management tasks and costs that were agreed upon during CNLM's negotiations with CDFG.

The Buena Vista Creek Ecological Reserve (Reserve) is located along State Route 78 (SR-78) between the two termini of Haymar Drive (east and west) (Appendix 1). SR-78 is along the northern boundary and a golf driving range is located along the western boundary. Unprotected open space abuts to eastern and most of the southern boundaries, but some housing borders the reserve along the southwest and western margins.

CDFG has held title to the reserve since approximately March 2007 and CNLM manages it pursuant to the MFA (as of August 2007). The Buena Vista Creek Ecological Reserve Supplemental Environmental Project (SEP) Habitat Restoration Plan (HRP) is currently under the second year of implementation, and will enter into the third year of implementation in January 2012.

The purpose of this work plan is to identify the tasks and budget required to complete the management activities for the upcoming management year. The management year encompasses the period from October 1, 2012 through September 30, 2013. Unless otherwise stated, all tasks will be performed by CNLM's Regional Preserve Manager Markus Speigelberg, Preserve Manager Patrick McConnell, and Ranger Todd Nordness.

Summary of Tasks and Goals for the Management Year:

- Document sensitive animal species observed
- Conduct Coastal California gnatcatcher (*Polioptila californica californica*) surveys.
- Conduct brown-headed cowbird (*Molothrus ruber*) trapping
- Continue developing a plant list for the site and conduct sensitive plant surveys
- Continue expanding priority weeds for treatment as other weed species become scarce
- Continue implementing the SEP, and ensuring remaining funds go towards adjacent restoration opportunities
- Coordinate with contractors to remove upland exotic plants
- Involve Preserve Calavera volunteers in the planting and maintenance of the SEP restoration
- Manage fire breaks that occur on the reserve
- Patrol and conduct site enforcement
- Remove trash and debris
- Maintain existing fences and gates

- Prepare and provide to the wildlife agencies an annual report that describes the management activities and information gathered during the fiscal year
- Prepare an updated habitat management plan (HMP) during this management year
- Provide an accounting of funds to be spent in the management year

Appendix 2 (Annual Task Schedule) indentifies the approximate schedule of field work throughout the management year.

II. Management Activities

The following sections identify and describe the activities to be performed during the next management year. Based upon the Property Analysis Record (PAR) developed by CNLM to outline long-term management tasks and costs, management activities for the HCA can be broken down into seven tasks: Capital Improvements, Biotic Surveys, Habitat Restoration and Maintenance, Public Services, Reporting, Office Maintenance, and Operations. Each of these categories is discussed below.

A. Capital Improvements

The maintenance of existing fencing, signs, gates, and the mini-kiosks are the primary capital improvement (site construction/maintenance) tasks this management year.

1. **Fences, gates and signs** Fences, gates and signs will be maintained during the year as necessary.

B. Biological Surveys

Sensitive species will be noted and mapped as they are encountered. Additionally, CNLM will continue to add to the plant species list by performing a limited amount of plant surveys and supplying vouchers to the San Diego Natural History museum (SDNHM).

1. **Coastal California gnatcatcher surveys** This marks the third management year since the previous comprehensive, preserve-wide gnatcatcher surveys were carried out on this and other Carlsbad preserves under CNLM management. CNLM will perform 2-3 surveys (presence-absence) on the Reserve during March and April.

2. **Sensitive Plant Surveys** CNLM will continue to count the smaller stands of vegetative thread-leaved brodiaea (*Brodiaea filifolia*), and search for flowering individuals among the large brodiaea locality found winter 2011. We have begun using this particular locality as a regular vegetative and flowering counting block among our long-term monitoring of thread-leaf brodiaea in our Carlsbad preserves.

3. **Plant list** CNLM will add to a growing plant species list for the site. Upland species have virtually all been accounted for, but as with previous management years, more work

needs to be accomplished supplying voucher specimens to the SDNHM, so that the county checklist can continue to be updated, and so that we can have positive ID's.

C. Habitat Restoration and Maintenance

1. Trap Brown-headed Cowbirds CNLM has budgeted for brown-headed cowbird trapping during the spring months, likely from April 1 to June 1, budget permitting. A contractor efficient in such methods will be used, and traps will be checked daily (following appropriate protocols) during the time that they are installed.

2. Mow Fuel Breaks CNLM will mow existing fuel breaks located along the Eucalyptus trees near the terminus of Marron Road, in the former agricultural land south of the Adobe, and along the southern boundary of the property in the spring to maintain the defensible space located behind the residential communities.

3. Mow Weedy Upland Areas CNLM will continue mowing weedy areas located near the southern boundary of the reserve (See Figure 4, CNLM 2011). The hope is that native forbs and grasses will be allowed further resources for propagation and growth if the non-native biomass is cut prior to seed set. Progress in this area will be assessed, and enhancement efforts will be continued as needed based on our appraisal of conditions. Mowing efforts will proceed when the thread-leaved brodiaea are between vegetative and flowering production, in order to minimize any threat to their physical integrity.

4. Nonnative Plant Removal and Oversight

a. SEP funding CWN has run out of the majority of their funds that were used for weed eradication in areas outside of their immediate management responsibilities. More grant funding is being pursued by CWN, but in the meantime, SEP funding has become more important in converting weedy riparian habitat into thriving native riparian communities. CNLM has utilized crews to remove a number of species previously deemed virtually impossible to remove on endowment funding alone (see Table 1 for a list of species). Appendix 3 contains a plan to continue removing these invasive species while also establishing native perennials in openings.

b. Contractors –Riparian A weed removal priority list for the riparian areas of the reserve has been created (Table 1). The majority of the weeds contracted for targeting are perennial or biennial weeds that appear to have a fast rate of spread. Other annual or ephemeral perennial species may be targeted as hardy perennials disappear. We expect to utilize funds from the endowment, as well as funds available from SEP funds to pursue eradication of riparian weeds. CNLM has budgeted for two 5-man crew days to be drawn from the endowment and expects as many as 10 five-man crew days from the SEP to be used in the control of riparian weeds.

Table 1. Weed treatment priorities and history

Common name	Species	CalIPC ranking
Species targeted 2008-2012 (CWN project funds)		
Pampas grass	*Cortaderia selloana*	High
Palms	*Washingtonia robusta, Phoenix canariensis*	Moderate, Limited
Acacia	*Acacia longifolia, A. Cyclops*	Not listed
Eucalyptus	*Eucalyptus* spp.	Limited to Moderate
Giant reed	*Arundo donax*	High
Shamal ash	*Fraxinus uhdei*	Not listed
Perennial pepperweed	*Lepidium latifolium*	High
Brazilian pepper	*Schinus terebinthifolius*	Limited
German ivy	*Delairea odorata*	High
Species targeted 2009-2012(Endowment and SEP funds)		
Florsits smilax	*Asparagus asparagoides*	Moderate
Iceplant	*Carpobrotus edulis*	High
Artichoke thistle	*Cynara cardunculus*	Moderate
English or Algerian ivy	*Hedera* sp.	High
Big periwinkle	*Vinca major*	Moderate
Edible fig	*Ficus carica*	Moderate
Fennel	*Foeniculum vulgare*	High
Himalayan blackberry	*Rubus armeniacus*	High
Chinese elm	*Ulmus parvifolia*	Not listed
Harding grass	*Phalaris aquatica*	Moderate
Fireweed groundsel	*Senecio linearifolius*	Not listed
Bull thistle	*Cirsium vulgare*	Moderate
Johnson grass	*Sorghum halapense*	Not listed
Black walnut	*Juglans nigra*	Not listed
Milk thistle	*Silybum marianum*	Limited
Poison hemlock	*Conium maculatum*	Moderate
Hardinggrass	*Phalaris aquatica*	Moderate
Panic Veldt grass	*Ehrharta erecta*	Moderate
Calla lilly	*Zantedeschia* sp.	Limited
Bermuda buttercup	*Oxalis pes-caprae*	Moderate
Nasturtium	*Tropaeolum majus*	Not listed
Castor bean	*Ricinus communis*	Limited
Italian thistle	*Carduus pycnocephalus*	Moderate
Bristly ox-tongue	*Picris echioides*	Limited
Spanish bayonet	*Yucca gloriosa*	Not listed
Japaneese privet	*Ligustrum japonicum*	Not listed
Agave	*Agave* sp.	Not listed
Tree of heaven	*Alilanthus altissima*	Moderate
Bottlebrush	*Melaleuca* sp.	Not listed

c. **Contractors –Uplands** On some hillsides, extant native grassland and scrub fragments can be enhanced and possibly expanded over time, providing yearly weed treatments take place before any seed is set. Crews will be contracted to keep areas clear of black mustard, Italian thistle, and fennel along the higher southern margins, and to additionally remove thatch from areas that still house native perennials and/or biennials.

5. Habitat Restoration

a. **SEP** CNLM will work with Preserve Calavera in overseeing volunteer activities that benefit the establishment of native vegetation to the restoration. CNLM is currently in the process of ordering more container plants in order to add a few more species (*Epilobium canum* ssp. *canum* and *Lonicera subspicata*) to the cover in the riparian transition area. The *Lonicera* is being grown from seed collected in nearby CNLM preserves. *Epilobium* will be ordered from Moosa Creek Nursery to coincide with delivery of the *Lonicera*

CNLM has drafted a restoration plan for converting up to roughly five acres of upland habitat adjacent to the SEP and is awaiting final approval from the Regional Water Quality Control Board prior to implementing this restoration (Appendix 3).

b. **CWN** The work previously partnered with Carlsbad Watershed Network is currently drying up due to the grant funds previously accessible being mostly expended. If more funds become available from another grant award, CNLM will maintain ties with CWN to enable some more weed treatments or planting to continue on the Reserve.

6. Trash Clean-Up Trash and debris accumulate in the reserve due to transient encampments, and from high water events transporting trash from upstream locations. CNLM will continue working with the City or local environmental groups to help coordinate and staff these public cleanup events. This management year we will also continue to personally remove trash as we find it.

D. Public Services

Public service activities include patrolling the reserve and response to emergencies. However, other opportunities for public service will undoubtedly be forthcoming during the year, such as coordinating local groups, individuals volunteering for reserve projects, and leading class field trips from local schools. Whenever possible, management will try to accommodate these activities.

1. Patrols Patrols will be performed about two to four times per month. Routine mending of fence breaks, collection of trash and debris, and replacement of signs are additional

tasks undertaken during patrols. Additionally, CNLM employees will work with the City of Carlsbad Police Department to eliminate habitation of the reserve by transients. Transients had been living in the reserve for decades and CNLM intends to keep the reserve clear of habitation because it has compromised the health of the habitats in the reserve. Observations of animal sightings and new human impacts will be gathered during patrols as well.

2. **Emergency Response** Hours have been allocated from the current budget for management to respond to emergencies on the reserve. Such emergencies could include response to wildfires and problems reported by neighbors.

3. **Public Outreach** Several volunteer events will occur during the management year with the public (i.e., environmental groups and the general public). Most of these activities will occur with Preserve Calavera as part of their participation in the SEP.

E. Reporting

Activities included within reporting requirements include the management of the reserve's database/GIS system and the production of various status reports to the USFWS, CDFG, and CNLM administration.

1. **Database/GIS Management** Data derived from biotic surveys, routine patrols and restoration activities will be entered into and maintained in the reserve's existing database and GIS system by CNLM. Efforts will be made to coordinate and standardize database fields and parameters with other reserves.

2. **Reports**

   a. **Year-End/Agency Reports** By the end of December 2013, an annual report will be prepared by the reserve manager detailing the results of the (previous management) year's management activities. This report will include recommendations for the continuation of various activities for the following management year and will be submitted to the USFWS, CDFG, and the City of Carlsbad as required under permit reporting conditions.

   b. **Annual Work Plan** The work plan for the next management year will be formulated by the end of this management year and will be based upon experiences during previous years operations. This work plan will be submitted to the USFWS, CDFG, and the City of Carlsbad.

   c. **Management Plan** A draft five-year management plan was provided to CDFG during the 2007-2008 management year. CNLM will draft a new habitat management plan for the Reserve during winter 2012-13.

F. Office Maintenance

Reserve staff will maintain offices in an organized manner to facilitate maximum efficiency.

This section of the budget includes outlays for general office work, utilities, and telephones, among other items/tasks.

G. Operations

Operations include the training and professional growth of reserve management personnel, and inspection of the reserve by CNLM administration. Funds have been allocated in the current budget for reserve management to attend workshops or seminars during the management year. Also included within this category are annual employee reviews.

III. Workload and Budgets

A. Supervision and Staffing

The Regional Preserve Manager will be supervised by CNLM's Director of Conservation Science (DCS), Dr. Deborah Rogers. Tasks and priorities will be coordinated by the Preserve Manager and the Regional Preserve Manager and approved by Dr. Rogers. The Regional Preserve Manager, Markus Spiegelberg will supervise the Preserve Manager and Rangers. Additionally, Dr. Rogers will assist with document review and scientific research conducted on Center preserves.

B. Budgeting

The total budget for this management year (excluding the SEP) is 33,190. Every effort will be made by reserve staff management to allocate time and expenses according to this estimated budget.

IV. References

CNLM/CDFG 2007. Buena Vista Creek Ecological Reserve Management and Funding Agreement with attachments. August 20, 2007.

CNLM 2008. Habitat Management Plan for the Buena Vista Creek Ecological Reserve, 2008-2012.

CNLM 2011. Buena Vista Creek Ecological Reserve Annual Report 2010-2011. October 2011.

V. Appendices

Appendix 1: Reserve Location Maps

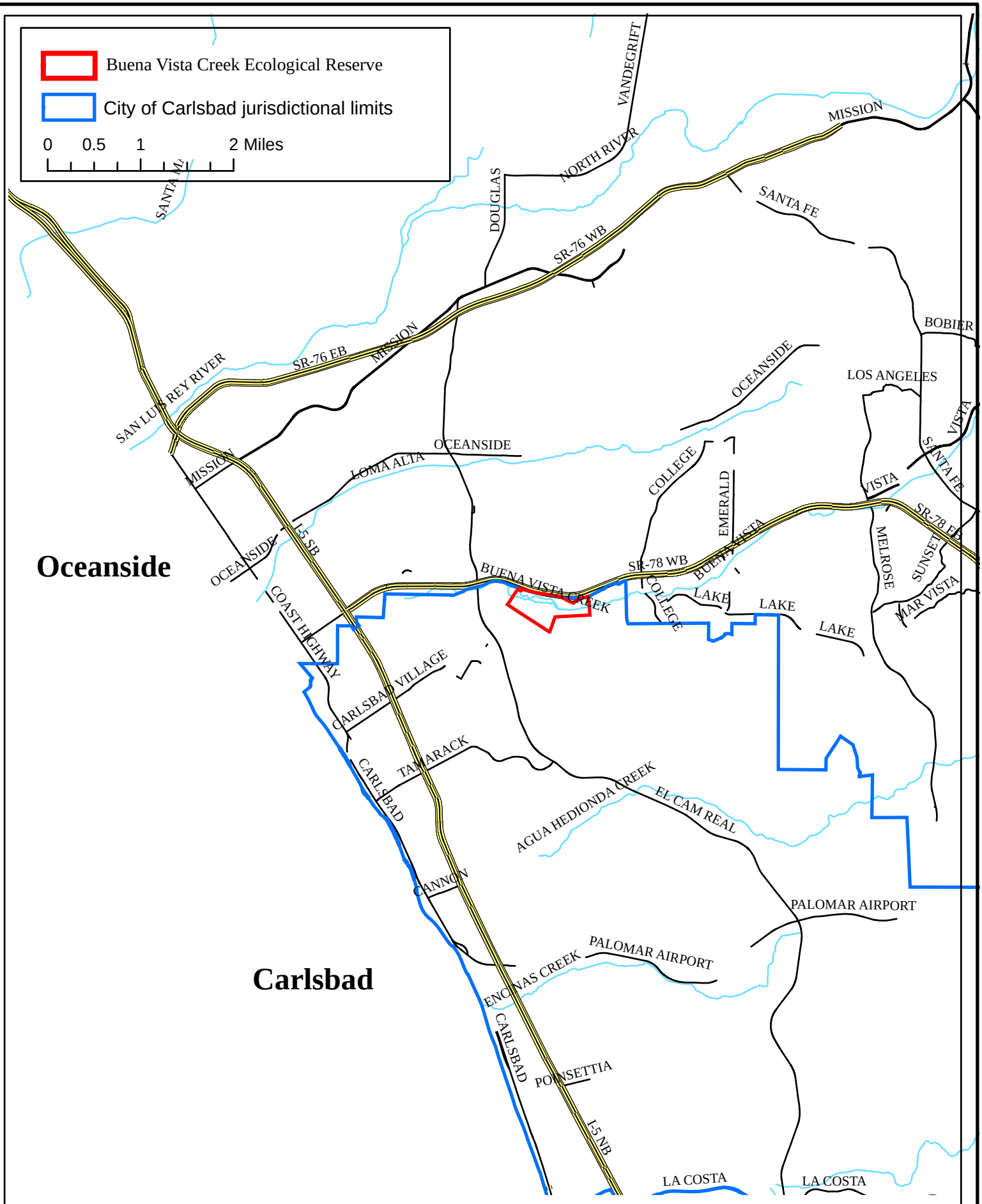

Figure 1
Project Location
Buena Vista Creek Ecological Reserve-Carlsbad, CA

Center for Natural Lands Management

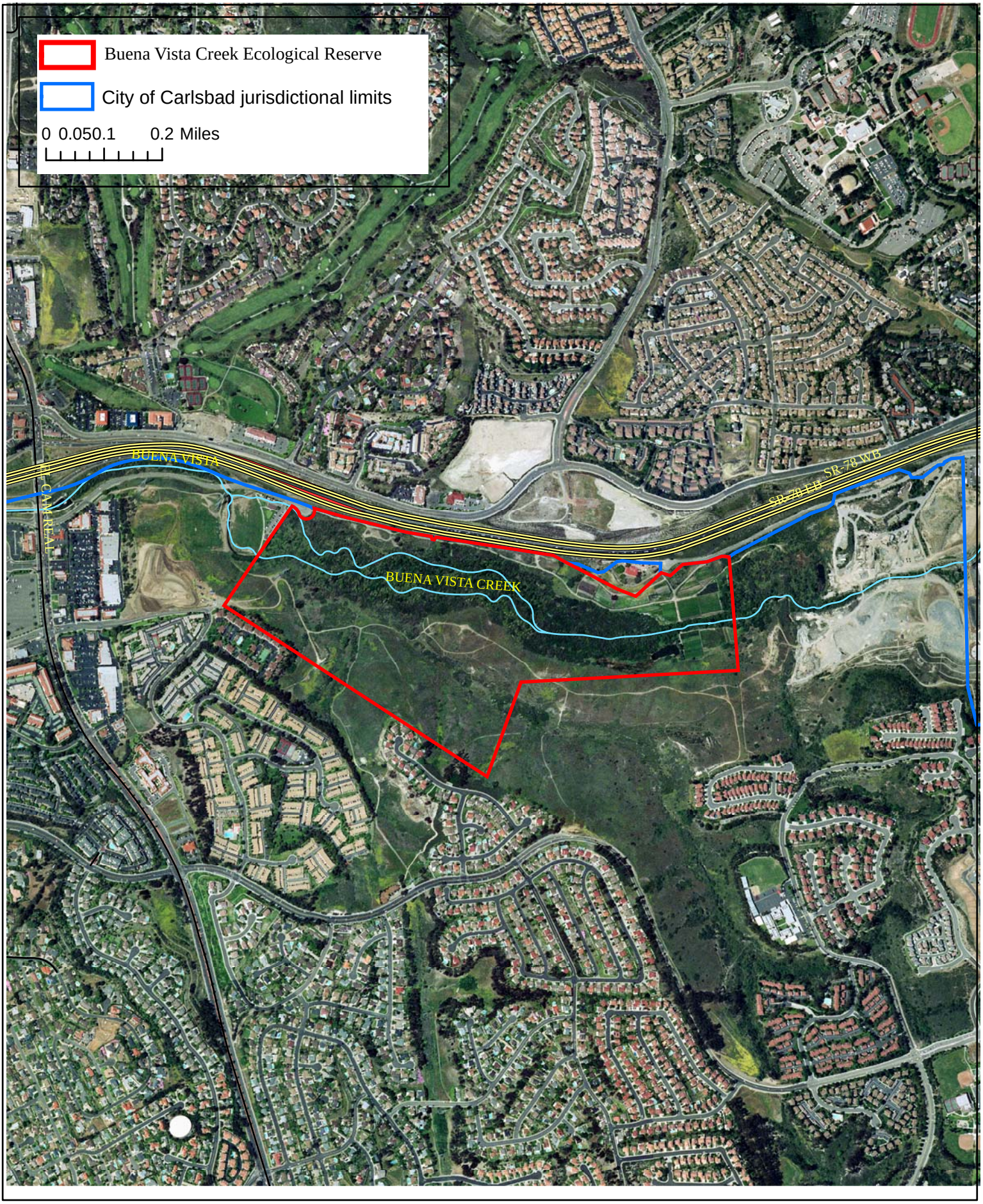

Figure 2
Project Vicinity
Buena Vista Creek Ecological Reserve-Carlsbad, CA

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Appendix 2: Annual Task Schedule

Task	October-December 2012	January-March 2013	April - June 2013	July - September 2013
Riparian exotic plant removal,	X			X
Upland exotic plant removal		X	X	
Trap cowbirds			X	
Sensitive plant surveys		X	X	
Cagn surveys		X	X	
Plant list			X	X
GIS/Database			X	
Habitat maintenance: fuel breaks			X	
Habitat restoration & enhancement	X	X	X	X
Habitat Management Plan	**X**	**X**		
Fencing/Signage/ Trash collection	X	X	X	X
Patrolling	X	X	X	X
Reports	X			X
Public outreach	X	X	X	X

Appendix 3: SEP upland restoration plan

Progress Report and Amendment Request

1. Projected cost for completing the Supplemental Environmental Project (SEP)
2. Cost for enhancing Buena Vista Creek Ecological Reserve riparian function through SEP funds
3. Request to create Coastal Sage Scrub habitat adjacent to SEP restoration

Submitted by Markus Spiegelberg and Patrick McConnell, Center for Natural Lands Management
September, 2012

Goals and reasoning for cost projection and requests for partial SEP funding

Objective 3 of the Scope of Work (SOW) for the SEP calls for "removal of exotic species from areas surrounding designated restoration areas." Riparian weed removal has been taking place using SEP funding, as per Objective 3 described above. Nonetheless, more work remains to be done, and CNLM thought it prudent to ensure at least a portion of remaining SEP funds were dedicated to completing riparian enhancement, and securing some commitment from the administrators of the SEP funds that a portion may be also used for adjacent coastal sage scrub (css) restoration. This plan is partitioned into three sections: the first section details work completed to date on the SEP restoration and projected funds required for SEP completion, as well as riparian enhancement through weed removal, with a projected cost to achieve increased riparian function through container and cutting placement in areas where weeds have been killed. The second section contains a plan for restoring to css the adjacent upland habitat that is currently a dense matrix of exotic grasses and forbs, and can be considered in two phases for budgeting or approval purposes. The third section summarizes costs associated with all projects and compares these costs with remaining SEP funds. Each section has cost totals, and the total costs and comparisons to remaining SEP funds can be compared in Section three.

I. Projected costs for maintaining SEP restoration and enhancing the riparian corridor

A. Maintaining and completing the SEP

At this time, the SEP (Supplemental Environmental Project) is currently in year two of implementation and has been free of irrigation since December 2011. Another round of planting by contractors during mid fall 2012 may be required, which will include roughly 200 container plants suited to coast live oak woodland, and possibly several willows. Other than some openings (which may be filled in by current herbaceous perennial and annual natives by next year) that may be planted in January, the SEP is progressing very impressively. The only remaining costs involve mostly contractor labor to keep the site free of weeds through 2015, assuming that there is no large tree/shrub die off which would require additional planting and maintenance. These costs are going to decrease over the next couple of years. Table 1 contains estimated manpower needed with costs, to keep the SEP weed free.

Table 1. Estimated costs for completion of SEP riparian restoration project as of July 2012

Year	Crew days	Cost per crew day	Task	Subtotal
2012	2	$1,600.00		$3,200.00
2013	3	$1,600.00 + $600.00	Planting, maintenance	$4,800.00
2014	2	$1,600.00	weed and irrigation removal	$3,200.00
2015	1	$1,600.00		$1,600.00
Water costs (electricity)				$240.00
Ranger labor = current rates for two rangers + mileage:				$11,391.00
reserve manager labor = 260 hours x $50.00/hr + mileage:				$15,332.20
Subtotal				$39,763.20
Total estimate with admin rate and contingency rate (24% + 10%)				$58,282.69

Table 2 depicts an accounting of funds spent on the SEP as of July 2012.

B. Riparian area enhancement

The large majority of perennial weeds along the riparian corridor (Objective 3) have been eradicated. Among these, a few have persisted, but are slowly being completely eradicated. The reserve manager inventoried remaining woody perennials, herbaceous perennials, and herbaceous annuals throughout the riparian areas, and Table 3 indicates how many or acreage remaining by species. Most of the woody perennial species have already been removed through SEP and other outside funds. These woody perennials include the large majority of woody perennials listed in Table 3, as well as a few that have been eradicated altogether, including giant reed (*Arundo donax*), and Acacia species. Only a few other mature Canary Island date palms persist, and all of these individuals have been treated at least once, and are almost completely dead. No mature Mexican fan palms exist in the drainage, and only two moderate-

size Pampas (*Cortaderia selloana*) grass could be found in the drainage. Agricultural Chemical and Supply Inc. (ACS Habitat Management, Inc.), the contractor of choice throughout removal efforts, has estimated remaining costs associated with killing those remaining in Table 3, and annual costs thenceforward to keep annual weeds at low levels.

Table 2. SEP expenditures as of July 2012, categorized by Task # and Task description

	Project Task	Contract Amount	Current Expenditures	Expenditures To Date	Remaining Balance
1	Designate Areas/Augment Efforts	$64,790.00	$991.19	$9,968.60	$54,821.40
2	Preliminary Hydrology Study	$10,912.00	-	$2,005.29	$8,906.71
3	Draft Restoration/Enhancement Plan	$ 6,820.00	-	$2,981.68	$3,838.32
4	Final Restoration/Enhancement Plan	$2,046.00	-	$308.55	$1,737.45
5	Implement Plan	$303,217.00	$24,147.54	$133,407.00	$169,810.00
6	Reporting	$ 7,263.50	-	$314.91	$6,948.59
	Total	$395,048.50	$25,457.63	$148,986.03	$246,062.47

The reserve manager has estimated manpower necessary to plant both containers and cuttings (see below), as well as supply costs, and these are listed in Table 4.

Table 3. Buena Vista Creek Ecological Reserve riparian weeds remaining

Riparian weeds remaining on Reserve			
Weed	Common Name	Count	acres
Cortaderia selloana	Pampas grass	2	
Phoenix canariensis	Canary Island date palm	5	
Eucalyptus sp.		2	
Fraxinus uhdei	Shamel ash	5	
Schinus terebeinthifolius	Brazilian pepper tree	1	
Delairea odorata	Cape Ivy	23	
Asparagus asparagoides	Florists smilax	20	
Carpobrotus edulis	Iceplant		0.25
Hedera sp.	German or English Ivy	2	0.25
Vinca major	Periwinkle	1	0.25
Ficus carica	Edible fig	2	
Rubus armeniacus	Himalayan blackberry	4	0.1
Ulmus parvifolia	Chineese elm	3	
Juglans nigra	Black walnut	70	
Conium maculatum	Poison hemlock		1

Ehrharta erecta	Panic Veldt grass		2.25
Topaeolum majus	Nasturtium		10
Oxalis pes-caprae	Oxalis		10
Ricinus communis	Castor bean	25	
Carduus pycnocephalus	Italain thistle		0.5
Picris echioides	Bristly ox-tongue		5
Parthenocissus inserta	Virginia creeper	20	1
Yucca sp.	Spanish bayonet	1	
Opuntia ficus-indica	Mission prickly pear	2	0.1
Ligustrum japonicum	Japaneese privet	4	
Ligustrum sp.	Privet	2	
Agave sp.	Agave	3	
Myoporum laetum	Myoporum	1	
Lonicera japonica	Japaneese honeysuckle	3	
Ailanthus altissima	Tree of heaven	2	
Melaleuca sp.	Bottlebrush	2	
Total		205	30.7
Labor and supplies cost to complete removal Year 1 (both columns)			$8,000.00
Subsequent removal years 2 and 3 (both columns)			$11,000.00
Total labor and supply estimate*			$19,000.00
Total estimate with admin rate and contingency			$25,460.00

* estimates by ACS Habitat Management, Inc.

Through grant monies, San Elijo Lagoon Foundation provided crews and supplies for container planting throughout mostly the western half of the Reserve during 2011, among many areas where palms were killed during previous years. These were only watered once or twice, and weeding was provided at least once during 2011. Many plants died, but roughly 25 percent survived and are doing well to date. Those species that survived and are prospering to date include the willow species (*S. laevigata, S. lasiolepis*), both mugwort species (*Artemisia douglassiana*, *A. palmeri)*, California rose (*Rosa californica*), and California blackberry (*Rubus ursinus*). It is believed that careful timing of planting will alleviate stress on container plantings. For instance, the aforementioned plantings took place in late winter, and therefore required root growth to outpace the upper soil horizons drying out during the subsequent spring and summer. The above listed species experienced much higher survivability than the other species placed in the openings, particularly the willows, mugworts, and blackberries. Furthermore, it has already been concluded, on the Reserve, that cuttings from local willows, if done properly and at an appropriate time in the fall, will root themselves almost immediately, and be components of the canopy by three or four years. Thus, the only grower supplied plants needed for replacing openings with native herbaceous perennials, and generating a willow riparian canopy, are the mugworts, the blackberries, and some roses..

Table 4. Cuttings and container plants – cost estimated for supplies and labor by category

Species	Cutting or container	Grower Cost per unit	# units*	Subtotal
S. goodingii	Cutting	N/A**	150	
S. laevigata	Cutting	N/A**	300	
S. lasiolepis	Cutting	N/A**	300	
A. douglasii	Container	2.80	300	$840.00
A. palmeri	Container	2.80	300	$840.00
R. usinus	Container	2.80	300	$840.00
Rosa californica	Container	2.80	100	$280.00
Contractor labor reserve manager labor				$7,000.00 ($1600.00 5-man crew day for 4.4 days) $3,502.32 (60 hrs labor + mileage)
Subtotal				$13,302.32
Total with admin and contingency charges				$17,825.11

* Cuttings estimated by both density desired for filling in current openings, plus replacing targeted woody weed locations

** Gathering, storage, and placement of cuttings will be accomplished by the reserve manager

II. SEP adjacent hillside restoration plan

The Center for Natural Lands Management (CNLM) has managed the SEP since inception, and wishes to expand upon the riparian restoration, south up the slope, creating at least 1.75 acres of coastal sage scrub vegetation (css). The Center feels that this upland restoration is consistent with Objective 3 in that it removes nonnative species to help protect the wetland restoration, but since it adds more extensive restoration of adjacent habitat rather than just nonnative plant removal, approval by SEP administrators was felt to be needed.

A. Background and rational for proposed project

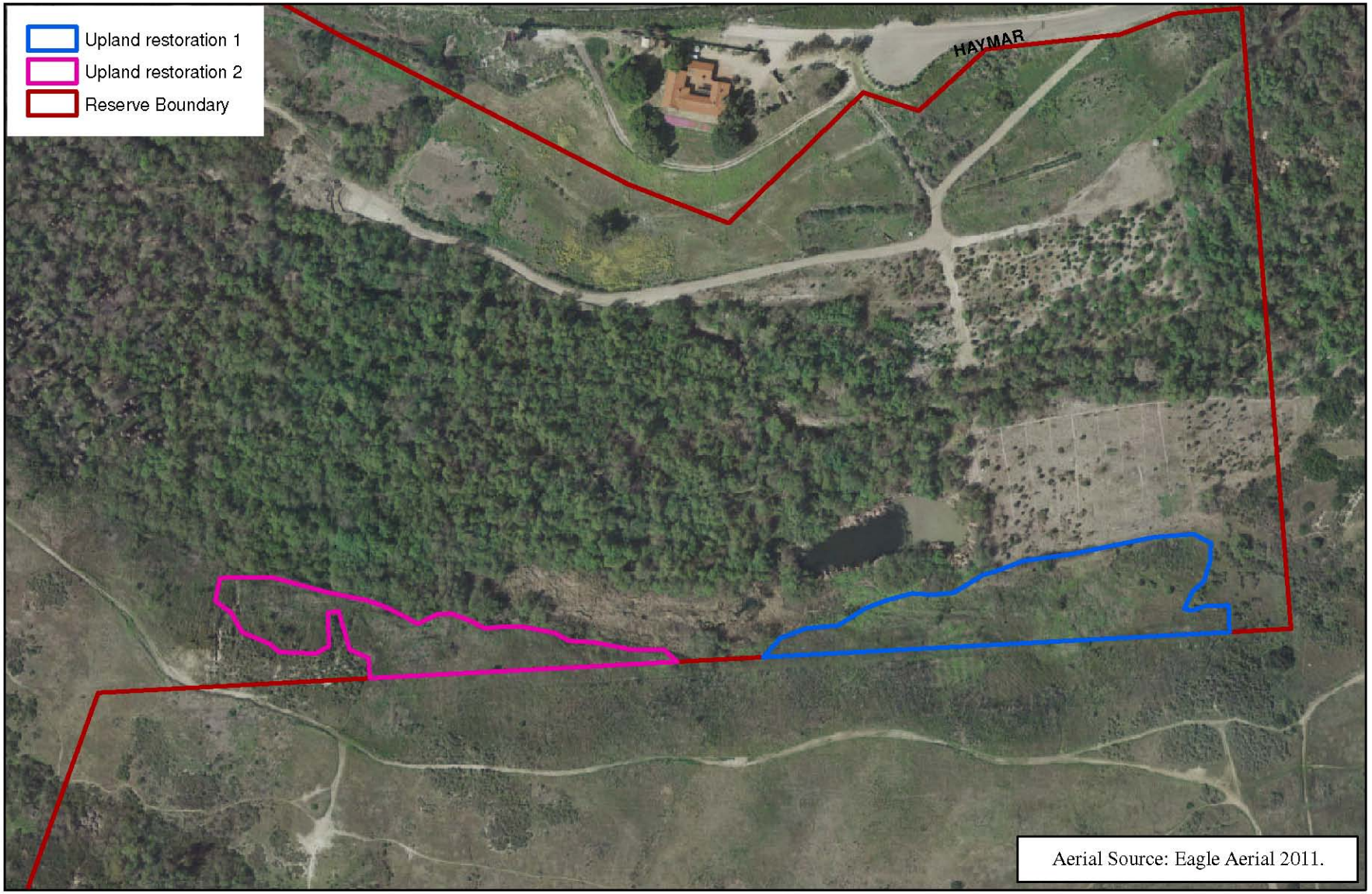
Upland weed removal (funded separately and not part of the SEP) has been ongoing since beginning the restoration, but has been taking place not in the directly adjacent hillside habitat, but in more promising areas further uphill as well as in the surrounding riparian corridor. Being that there exists a solid line of weeds along the upper (southern) boundary of the Reserve, simply removing black mustard (*Brassica nigra*), fennel (*Foeniculum vulgare*) and poison hemlock (*Conium maculatum*) will only result in more weeds continually moving into these areas, threatening the SEP. The only solution, therefore, to keep weeds from continually moving into the margins of the riparian restoration, is to create upland habitat that can be self-sustaining and keep weed loads from moving through. This idea is further benefited by the future development of the directly adjacent property uphill, and this development will likely remove the seed bank from the southern boundary of the Reserve. This site has also been selected because water is readily and easily accessible, and the entire Reserve would benefit from having a healthy buffer to the riparian system. Table 5 of this section contains cost estimates for this project. Table 6 summarizes all costs if all portions are approved, and includes remaining SEP funds both before implementation and afterwards.

B. Methods

See attached figure of the disturbed area south of the SEP. The weedy slope continues for hundreds of yards west of the southern boundary of the SEP. The adjacent habitat to these upland areas includes freshwater marsh and southern willow scrub. The total area for this proposed project is 1.75 acres. More of the same disturbed habitat continues along the southern boundary to the west for several hundred additional yards, and can also be restored, and the acreage of this additional site is roughly 1.25 acres (Upland Restoration 2). Thus, the cost will be multiplied by .714 and equal an additional $27,464.00, and the summary acreage will in this case be approximately three acres. See the table on page three of this plan for cost estimates, irrigation method, planting density, materials, and manpower estimates.

A typical north-facing css mix for Carlsbad will include, but not be limited to: giant wild-rye (*Elymus condensatus*), coast monkeyflower (*Mimulus aurentiacus* var. *puniceus*), toyon (*Heteromeles arbutifolia*), laurel sumac (*Malosma laurina*), coast melic (*Melica imperfecta*), sawtooth goldenbush (*Hazardia squarrosa*), lemonade berry (*Rhus integrifolia*), golden yarrow (*Eriophyllum confertifflorum* var. *confertiflorum*), California sage (Artemisia californica), and

black sage (*Salvia mellifera*). Seed will be gathered from this reserve and nearby CNLM preserves and provided to the chosen grower.



Potential upland restoration oppportunities

Buena Vista Creek Ecological Reserve, Carlsbad California

50 25 0 50 Meters

Center for Natural Lands Management

Table 5. Cost by task, supply, and manpower for restoring 1.75 acres adjacent to the SEP

Task	Estimated cost	Timeline	Notes
Initial vegetation removal @ 5-man crew day x 2 days + fuel costs	$3300.00	September 2012	Mechanical removal and creation of small piles on hillside
Weed removal yr1 @ 5-man crew day + herbicide cost x 4 days	$7200.00	January – April 2013	At observed per acre initial and follow-up removal by contractor in nearby restoration creation
Weed removal yr2	$5400.00	January – April 2014	3 five-man crew days on 2-3 separate occasions
Weed removal yr3 ~ 2 days	$3600.00	April 2015, April 2016	One five-man crew day per year
Container plants @ 2.90/gallon container ~ 500 plants/acre	$2537.00	Seed supplied to vendor August 2012	Based on experience with preferred vendor. Density low to allow for recruitment from seed production among installed plants
Container plant installation @ one 5-man crew day per 400 plants	$3360.00	February 2013	Based on experience supervising crews installing in heavy clay soils
Irrigation supplies (drip) @$2,058/acre	$3601.5		Based on combined cost for .8 acres drip irrigation in nearby restoration 2012 (1.2 x $1715.00)
Irrigation installation @$1,600.00/day	$4800.00	February 2013	Based on experience installing on a per-acre basis
Electricity cost for pump @ $50.00/month	$600.00		Based on monthly costs to irrigate SEP restoration
Compost	$50.00	February 2013	To mix with soils removed for placement of container plants
Project management @ 40 hours year 1, 32 in year 2 and 3 + mileage	$4,884.88		
Admin and contingency	$13,373.35		
Total cost 1.75 acres Total cost 1.25 acres	$52,706.73 $37,632.60*		
Toal both areas	$90,339.33		

*cost calculated based on a ratio of acreage of 1.75 acres costs itemized above

C. Deliverables for CSS project

Before photos will be taken facing west and east, respectively, along the southern border, and a photo spot will be located that best captures the entirety of the site(s) prior to beginning work. Annual photos will take place from the fixed points established as before photo points. CNLM will keep a segregated file of all contractor and supplier invoices. CNLM will also supply reports if requested.

III. Cost comparisons to remaining SEP funds

Each task listed in Table 6 below, with the exception of the SEP completion are subject to approval by SEP administrators. Riparian enhancement has been ongoing with SEP funds, and is likely to continue, but this plan outlines what is needed for effectively enhancing the functionality of the riparian corridor. Aside from other reasons mentioned in the Rational portion of Section II, the css restoration will provide habitat to coastal California gnatcatchers (*Polioptila californica californica*) that are already present nearby, and thus possibly provide a linkage to fragmented territories elsewhere.

Table 6. Task list and estimated costs of each project in relation to SEP funds

Task	Estimated Cost	SEP initial balance	SEP end balance
Completing SEP	$58,282.69	$246,062.47	$187,779.78
Riparian weed eradication	$25,460.00	$187.779.78	$162,319.78
Riparian enhancement	$17,825.11	$162,319.78	$144,494.67
CSS restoration 1.75 acres	$52,706.73	$144,494.67	$91,787.94
CSS restoration 1.25 acres	$37,632.60	$91,787.94	$54,155.34
Total estimated cost to SEP	$191,907.13		$54,155.34

As of this Plan, only 38 percent of SEP funds have been expended on a restoration and riparian enhancement effort that have both been performing very impressively. It is projected that an additional 14 percent, totaling roughly 52 percent of SEP funding used for the restoration and the large majority of riparian weed removal in the riparian corridor. To complete the riparian weed removal will add only another seven percent to this total, and together with container planting and cuttings, the total SEP usage will only be 64 percent of the original $395,040.50. Finally, whether taken as partial (77percent SEP usage) or total (88 percent) css restoration.